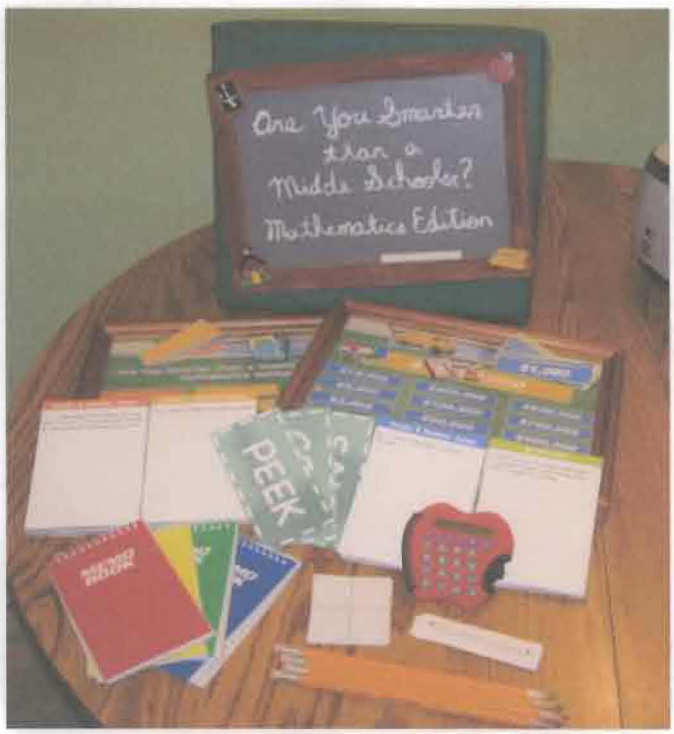
Are You Smarter Than a Middle Schooler?: Mathematics Edition

By: Ashley Barnholt



Abstract and Acknowledgments

Abstract:

Similar to *Are You Smarter Than a Fifth Grader?*, a popular TV game show and board game, *Are You Smarter Than A Middle Schooler?: Mathematics Edition* is a board game that asks mathematical questions typically found in grades 6, 7, and 8. Each question is correlated to a specific Indiana Academic Standard Indicator for mathematics in the middle grades. Questions cover number sense, computation, algebra and functions, geometry, measurement, data analysis and probability, and problem solving. The goal of the game is to answer 4 questions from each grade level successfully for a chance at a million-dollar question, and thus $1,000,000.

Acknowledgments:

I want to thank Dr. Oliver Jenkins of the Ball State University mathematics department for advising me through this project.

I would also like to thank Daniel Panyard for checking my project for technical errors.

I would finally like to thank Dawn Barnholt for proofreading my project.

Are You Smarter Than A Middle Schooler?: Mathematics Edition

An Honors Thesis (HONRS 499)

by

Ashley Barnholt

Thesis Advisor: Dr. Oliver Jenkins

Advisor's Signature: Oliver F. Jenkins

Ball State University
Muncie, IN

April 2010

Graduation Date: May 8, 2010

Inspiration and Explanation

Inspiration

I was inspired to create this game after viewing the popular TV game show *Are You Smarter Than A Fifth Grader?*. Contestants of the show are asked a series of questions from a first grade through fifth grade curriculum. After answering 2 questions from each grade level correctly, the contestant has a chance at the million-dollar question. I conducted some research and found that the show had also been made into a board game. I thus sought to create a board game with a similar theme, only this time tailoring it to my major: mathematics education. I decided to follow the mathematics curriculum of middle school students, as it was closer to the fifth grade level of the original game.

Explanation

As a guide for writing questions, I researched the Indiana Academic Standards for mathematics in grades 6, 7, and 8. The standards include number sense, computation, algebra and functions, geometry, measurement, data analysis and probability, and problem solving. Each standard furthermore has sub-standards, called indicators, which specify the type of mathematical tasks expected of students. The indicators associated with each standard are listed on the question cards found in the game. The last standard, problem solving, is broader and the indicators are the same for grades 6, 7, and 8. The indicators listed skills such as breaking a problem into smaller parts, applying strategies from simpler problems to more complex problems, and organizing pertinent information. I therefore decided to create complex problems requiring problem-solving skills as the million-dollar questions. What resulted was a comprehensive game corresponding to the Indiana Academic Standards for mathematics in grades 6, 7, and 8.

For 2 to 4 players
Ages 10+

Are You Smarter Than a Middle Schooler?: Mathematics Edition

By: Ashley Barnholt

Contents

Question cards * 2 Game boards * 4 Money Markers * 12 Grade Markers * "Peek" Card * "Copy" Card * "Save" Card * 12 $1,000 Cards * Pencils* Pads of Paper* Graph Paper* Number Line Paper* Calculator

Object

Answer 13 middle school mathematics questions correctly. Prove that you are smarter than a middle schooler and win $1,000,000!

Setting up the Game

1. Place the money game board and the grade game board in front of all players.
2. Players each choose a money marker and place them by the money game board.
3. Place the "Peek", "Copy", and "Save" cards next to the game boards.
4. Place the $1,000 cards and the 12 grade markers next to the game boards.
5. Separate the deck of question cards into 4 decks: one each for 6th, 7th, 8th, and Million Dollar.

Introduction

The goal is to answer 12 questions (4 from each grade level), and then correctly answer a Million-Dollar question. The questions are based on material from a mathematics curriculum in the middle grades.

How to win money

Players may win money by answering questions correctly on their turn or by answering questions correctly when asked for help by another player.

How to Play

Select a player to begin and game play continues in a clockwise direction.

On your turn

1. Choose a grade level and take the top card from that deck. Make sure that grade is not yet covered on the grade game board. The heading at the top of the card indicates the math standard for that grade level.
2. Read the question aloud.
3. All players are to write their answer on their notepad. You may do one of the following:
   *If you are confident in your answer, tell the other players. Next reveal the correct answer by turning the card over and reading what is written in red.
   *If you are not confident in your answer, you have one opportunity to peek at another player's answer and one opportunity to copy another player's answer.

Correct Answer

1. If you answered correctly, keep the card and place the grade marker over the corresponding grade space on the grade game board. Place your money marker on the $1,000 space on the money game board.
2. You continue with your turn by choosing another card. Continue as described above, making sure to move your money marker up each time as well as place a grade marker on the corresponding space. Remember that you are to answer 4 questions from each grade level.

Incorrect Answer

1. If you answered incorrectly, you can no longer win the million dollars and take no more turns. You may keep any $1,000 cards previously acquired and may earn additional $1,000 cards by helping other players answer questions.
2. Remove your grade markers and money markers from the game boards. The next player continues with his turn. (Note: Once you have surpassed the $25,000 level, you are guaranteed that much money.)

Leaving the Game

After reading a question, you may decide to quit the game and take the money previously earned. If so, remove your markers from the game boards and continue to help other players as desired for $1,000 cards. However, you must announce to everyone: "I am NOT smarter than a middle schooler."

Peek

Place the "peek" card next to the player whose answer you would like to see. You may then decide for yourself if you would like to take that player's answer.

*If you have the same answer as the other player, and your answer is correct, move your money marker up and continue playing. The player whose answer you peeked at receives a $1,000 card.

*If you have a different answer than the other player, and your answer is correct, move your money marker up and continue playing. The player whose answer you peeked at does not receive a $1,000 card.

*If your answer is incorrect while the player's answer you peeked at is correct, you can no longer win the million dollars and take no more turns. You may keep any $1,000 cards previously acquired and may earn additional $1,000 cards by helping other players answer questions. Remove your grade markers and money markers from the game boards. The player whose answer you peeked at collects a $1,000 card. The next player continues with his turn.

Copy

Place the "copy" card next to the player whose answer you would like to copy. You must take that player's answer.

*If the answer you copied is correct, move your money marker up and continue with your turn. The player whose answer you copied receives a $1,000 card.

*If the answer you copied is incorrect, you can no longer win the million dollars and take no more turns. You may keep any $1,000 cards previously acquired and may earn additional $1,000 cards by helping other players answer questions. Remove your grade markers and money markers from the game boards. The player whose answer you copied does not collect a $1,000 card. The next player continues with his turn.

Save

If you answer a question incorrectly (including if you peeked or copied), you have one opportunity to "save" yourself. To do so, place the "save" card in front of one of the other players, at which time that player reveals his answer.

*If that player's answer is correct, move your money marker up and continue with your turn. The player who saved you receives a $1,000 card.

*If that player's answer is incorrect, you can no longer win the million dollars and take no more turns. You may keep any $1,000 cards previously acquired and may earn additional $1,000 cards by helping other players answer questions. Remove your grade markers and money markers from the game boards. The player whose answer you took does not collect a $1,000 card. The next player continues with his turn.

Million-Dollar Question

If you answer all 12 questions correctly (4 from each grade level), you have the opportunity to win $1,000,000! Take the top card from the million-dollar deck. Read the question aloud. You may NOT receive help. Determine your answer and tell the other players.

*If you answered correctly, you are the winner!

*If you answered incorrectly, you can no longer win the million dollars and take no more turns. You may keep any $1,000 cards previously acquired and may earn additional $1,000 cards by helping other players answer questions. Remove your grade markers and money markers from the game boards. The next player continues with his turn.

Winning

You may win the game by winning the million dollars. However, if no one does so, the player with the most money at the end of the game wins.

Bibliography

Are You Smarter Than a 5th Grader?. Pawtucket, RI: Hasbro / Parker, 2007.

Fisher, Lyle, and Bob Larsen. *Super Problems*. Palo Alto, CA: Dale Seymour Publications, 1982. Print.

Fisher, Lyle. *Problem of the Week*. [S.l.]: Dale Seymour Publications. Print.

Hohenwarter, Markus. *GeoGebra*. Computer software. *GeoGebra*. Web. <www.geogebra.org>.

"January." *Mathematics Teacher* Jan. 1996: 40. Print.

"MATHCOUNTS Foundation - Problem of the Week." *MATHCOUNTS Foundation - Homepage*. MATHCOUNTS Foundation. Web. 6 Apr. 2010. <http://mathcounts.org/Page.aspx?pid=355>.

"May." *Mathematics Teacher* May 1994: 346. Print.

"November." *Mathematics Teacher* Nov. 1994: 624. Print.

"October." *Mathematics Teacher* Oct. 1995: 580. Print.

"Print Library - Indiana Standards & Resources." *Indiana Reading First*. Web. 18 Aug. 2009. <http://dc.doe.in.gov/Standards/AcademicStandards/PrintLibrary/math.shtml#2000>.

Schadler, Reuben. *Algebra Problems: One Step beyond*. Palo Alto, CA: Dale Seymour Publications, 1992. Print.

Schadler, Reuben. *Geometry Problems: One Step beyond*. Palo Alto, CA: Dale Seymour Publications, 1984. Print.

"September." *Mathematics Teacher* Sept. 1996: 492. Print.